

Nalco Docket No.: 7560-NES
Customer No. 000049459

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REMARKS

This in reply to the Office Action mailed on April 1, 2005 ("Office Action").

Claims 1-59 are currently pending.

Claim 41 is rejected under 35 U.S.C. § 112 first paragraph.

Claims 1-14 and 41-50 are rejected under 35 U.S.C. § 112 second paragraph.

Claims 15-16 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 4,396,499 ("McCoy").

Claims 1, 28 and 29 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,396,499 ("McCoy").

Claims 1-48 are rejected under 35 U.S.C. § 103(a) over newly-cited U.S. Patent No. 5,585,446 ("Marten").

Claims 51-59 are allowed.

Claims 49-50 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. § 112, second paragraph and to include all of the limitations of the base claim and any intervening claims.

Claims 1, 5, 28 and 42 are amended to particularly point out and distinctly claim subject matter which Applicant regards as his invention.

Claim 41 is cancelled to reduce the matters at issue.

Claim 44 is amended to correct an error. In particular, in step (d), line 4, "n is 113" should be "n is 100 to 113". Support for this amendment is found in the specification at page 11, line 23.

New claim 60 is added to particularly point out and distinctly claim subject matter which Applicant regards as his invention. Support for this amendment is found in original claim 41 and in the specification at page 4, line 21 to page 7, line 31.

No new matter is added by this amendment.

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DISCUSSION

The Rejection of Claim 41 under 35 U.S.C. § 112, First Paragraph

Applicant respectfully asserts that this rejection is rendered moot by the cancellation of claim 41.

The Rejection of Claims 1-14 and 41-50 under 35 U.S.C. § 112, Second Paragraph

Claims 1-14 and 41-50 are rejected under 35 U.S.C. § 112, Second Paragraph. In particular, the Examiner states:

Claim 1 contains improper Markush language. Proper language is "selected from the group consisting of A, B, and C". It is unclear where the first and the second reactant of the reaction product end.

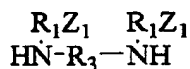
Claim 41 sets forth R-Z as an alkyl group. R is an alkylene group in the structures. Structures (c), (e) and (f) lack the proper valency of NH-.

Office Action at pages 2-3.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that amended claim 1 employs proper Markush language and therefore respectfully requests withdrawal of the rejection of claims 1-14 under 35 U.S.C. § 112 second paragraph.

Applicant respectfully asserts that rejection is moot with respect to claim 41. Nonetheless, structure 41(f) now appears in new claim 60 as structure 60(c). Applicant respectfully asserts that the valency of the nitrogen atom in structures 60(c) is correct. The parentheses around the group (R1Z1) is commonly used chemical notation for a group that is bonded directly to the atom on its left but not to the group on its right. For example, structure 60(c) could also be written



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The Rejection of Claims 15-16 under 35 U.S.C. § 102(b) over U.S. Patent No. 4,396,499

Claims 15-16 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 4,396,499

("McCoy"). In particular, the Examiner states:

... McCoy et al (Example IV) discloses the polymeric reaction product of Jeffamine® M-360 with EPON® 828. Although the claims set forth an amine capping group, said amine capping group is indistinct from the Jeffamine® M-360 as the first amine-containing monomer.

Office Action at page 3.

Applicants respectfully traverse this rejection.

Applicant respectfully points out that the polymers of claims 15-16 are the reaction product of a (1) first amine-containing monomer having two reactive amino hydrogens, (2) a second amine-containing monomer having two reactive amino hydrogens and at least one tertiary amine group, and (3) a diglycidyl ether of an aliphatic diol.

McCoy (Example IV), on the other hand, discloses a polymer prepared from EPON 828 (diglycidyl ether of Bisphenol A) and a diglycidyl ether which contains aromatic groups and does not disclose the second amine-containing monomer having two reactive amino hydrogens and at least one tertiary amine group. Accordingly, as McCoy (Example 4) discloses different polymers than the polymers of this invention, Applicants respectfully request withdrawal of the rejection of claims 15-16 under 35 U.S.C. § 102(b) over McCoy.

The Rejection of Claims 1 and 28-29 under 35 U.S.C. § 103(a) over U.S. Patent No. 4,396,499

Claims 1 and 28-29 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,396,499

("McCoy"). In particular, the Examiner states:

... McCoy et al (Example IV) discloses the polymeric reaction product of Jeffamine® M-360 with EPON® 828. Although the claims set forth an amine capping group, said amine capping group is indistinct from the Jeffamine® M-360 as the first amine-containing monomer.

McCoy et al differs from claim 1 in the terminal butoxy ether rather than a methyl ether.

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Structural similarities have been found to support a *prima facie* case of obviousness. See, e.g., *In re Wilder*, 563 F.2d 457, 460, 195 USPQ 426, 429 (CCPA 1977) (adjacent homologs and structural isomers). The terminal capping ether is not critical as evidenced by applicants multiple permutations of possible reactants. It would have been obvious to one having ordinary skill in the art at the time of applicants' invention to employ methoxy ethers for the butoxy ethers taught in the McCoy et al reference as functional equivalents.

McCoy et al differs from claims 28 and 29, wherein the reactive epoxide is an epoxidized olefin having two epoxide groups.

McCoy et al (column 2, lines 1-9 and 25-34) teaches the epoxides may include diepoxides having terminal epoxides groups linked by an aliphatic group. Said structure reads on diepoxides derived from epoxidizing a diolefin. Since it is the product under consideration rather than the method said product is made, claims 28-29 are indistinct from the diepoxides as characterized in column 2, lines 1-9 and 25-34 of the McCoy et al reference.

It would have been obvious to one having ordinary skill in the art at the time of applicants' invention to employ diepoxides as taught in the McCoy et al reference as functional equivalents.

Office Action at pages 4-5.

Applicants respectfully traverse this rejection.

Applicant has amended claim 1 to exclude amines as disclosed by McCoy. Accordingly, as McCoy does not teach or suggest polymers prepared from 2-(2-aminoethoxy) ethanol; and tris(hydroxymethyl)aminomethane and mixtures thereof, Applicant respectfully requests withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a) over McCoy.

With regard to claims 28 and 29, Applicant respectfully asserts that McCoy does not teach or suggest a polymer prepared from (1) a first amine-containing monomer having two reactive amino hydrogens, (2) a second amine-containing monomer having two reactive amino hydrogens and at least one tertiary amine group, and (3) an epoxidized olefin as recited in amended claim 28. Applicant further respectfully asserts that McCoy does not disclose capping of the polymers as recited in claim 29 and described in the specification at page 10, line 9 to page 11, line 7. Accordingly, Applicant respectfully request withdrawal of the rejection of claims 28 and 29 under 35 U.S.C. § 103(a) over McCoy.

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The Rejection of Claims 1-48 under 35 U.S.C. § 103(a) over U.S. Patent No. 5,585,446

Claims 1-48 are rejected under 35 U.S.C. § 103(a) over newly-cited U.S. Patent No. 5,585,446 ("Marten"). In particular, the Examiner states:

... Marten et al (abstract; column 3, lines 54 et seq; column 4, lines 23 et seq and column 4, lines 56 et seq, column 7, lines 32 et seq; example; and claims) disclose epoxy resin compositions, which react to form the polymeric reaction product. Said composition comprising JEFFAMINE monoamines (see claims 21 and 22); and aliphatic polyepoxides. Marten et al (column 7, lines 32 et seq) clearly contemplates reactants having tertiary amines and having two amino hydrogens and a tertiary amine, eg, N-aminoethylpiperazine. Marten et al discloses the polymers broadly employing reactant species reading on applicants species.

Office Action at page 5.

Applicant respectfully traverses this rejection.

Applicant respectfully asserts that Marten discloses an epoxy resin compounds which are reaction products of compounds (A1) that contain at least two 1,2-epoxide groups per molecule, compounds (A2) that are polyoxyalkylenemonoamines that have a molecular weight of from 130 to 900, preferably about 500 to about 700, and, optionally, polyoxyalkylenemonoamines (A3) that have a molecular weight of from 900 to 5000 and/or polycarboxylic acids (A4). The resin composition additionally contains at least one hardener (B) and, if desired, customary additives (C). See Abstract and col. 5, lines 47-49.

Applicant respectfully asserts that claims 1-14 all recite a polymer composition based on the reaction product of an amine having two reactive amino hydrogens selected from the group consisting of 2-(2-aminoethoxy) ethanol and tris(hydroxymethyl)aminomethane and mixtures thereof and a glycidyl ether compound selected from the group consisting of diglycidyl ethers of aliphatic diols, triglycidyl ethers of aliphatic triols, and tetraglycidyl ethers of aliphatic polyols, or mixtures thereof.

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Applicant respectfully asserts that Marten does not teach or suggest preparing polymer products from 2-(2-aminoethoxy) ethanol (MW 105) and/or tris(hydroxymethyl)aminomethane (MW 121) and a glycidyl ether compound selected from the group consisting of diglycidyl ethers of aliphatic diols, triglycidyl ethers of aliphatic triols, and tetraglycidyl ethers of aliphatic polyols, or mixtures thereof of claim 1 from which claims 2-14 depend.

With regard to claims 15-27, Applicant respectfully asserts that Marten provides no basis for selecting an amine having two reactive amino hydrogens and a tertiary amine group from among the list of amine hardeners presented at col. 7, lines 32-62 and a diglycidyl ether of an aliphatic diol from among the list of suitable epoxide components presented at col. 3, line 54 to col. 5, line 14 to thereby arrive at the combination of claim 15 from which claims 16-26 depend.

With regard to claims 28-40, Applicant respectfully asserts that Marten does not disclose polymers prepared from epoxidized olefins having two epoxide groups and further provides no basis for selecting an amine having two reactive amino hydrogens and a tertiary amine group from among the list of amine hardeners presented at col. 7, lines 32-62 to thereby arrive at the combination of claim 28 from which claims 29-40 depend.

With regard to claim 41, now claim 60, Applicant respectfully asserts that Marten does not disclose the use of N-alkylating agents and further provides no basis for selecting the recited diepoxy compound from the list of epoxide components presented at col. 3, line 54 to col. 5, line 14, or for selecting the recited amines having two reactive hydrogen atoms from the amines presented at col. 5, lines 15-55 to thereby arrive at the combination of claim 60.

With regard to claim 42, Applicant respectfully asserts that Marten does not disclose any of the recited first amines having 2 reactive hydrogen atoms, the use of N-alkylating agents or the use of capping monomers and further provides no basis for selecting the recited diepoxy compounds from the list of suitable epoxide components presented at col. 3, line 54 to col. 5, line 14 to thereby arrive at the combination of claim 42. Applicant further respectfully asserts that Marten does not disclose, teach or suggest the mixture of polymers of claim 43, which depends from claim 42.

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With regard to claim 44, Applicant respectfully asserts that Marten does disclose the use of N-alkylating agents or the use of capping monomers and further provides no basis for selecting the recited diepoxy compounds from the list of suitable epoxide components presented at col. 3, line 54 to col. 5, line 14 to thereby arrive at the combination of claim 42. Applicant further respectfully asserts that Marten does not disclose, teach or suggest the various compositions of claim 45-48 which depend from claim 44.

Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1-48 under 35 U.S.C. § 103(a) over Marten.

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CONCLUSION

In view of the foregoing amendment and remarks, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §§ 112, first and second paragraphs, 102(b) and 103(a) and respectfully assert that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully Submitted,



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Date: 6/28/05